Chapter 10 concept map

Skeletal muscle performs five major functions

Characteristics of Skeletal Muscle Tissue

Composed of thousands of muscle cells and is typically as long as the entire muscle

Body movement

Maintenance of posture

Protect and supports softer tissues

Storage and movement of materials

.Excitability - responsive to nervous system stimulation; neurons secrete neurotransmitters that bind to muscle cells.

Conductivity - electrical charge traveling along plasma membrane is initiated in response to a neurotransmitter binding to the muscle cell.

Contractility - contractile proteins within muscle cells slide past each other tension used to pull on bones of skeleton.

Elasticity - is the ability of a muscle to return to its original length following shortening or lengthening of the muscle.

Often referred to as muscle fibers

Connective Tissue Components

3 layers of connective tissue are found in each

Extensibility - is the lengthening of a muscle cell (e.g., when you flex your elbow joint, you are contracting the biceps brachii on the anterior side of your arm, while the triceps brachii on the posterior side is extended with the motion.

Organized into bundles, termed fascicles

Sarcoplasmic Reticulum

Myofibrils

Thick Filaments

Thin Filaments: Thin filaments are made of four proteins:

F-actin: A twisted strand of two rows of G-actin molecules. Each G-actin molecule has a binding, or active site, for myosin. When myosin binds to the active site on G-actin, contraction will occur.

Nebulin: Nebulin holds the F-actin strand together.

Tropomyosin: Tropomyosin covers the active sites on the G-actin molecules so that contraction does not occur all the time.

Muscle is composed of fibers, connective tissue, blood

Troponin: Troponin holds, or locks, the tropomyosin in place. It contains a binding site for calcium. When the muscle receives an electrical impulse, or action potential, from a motor neuron, and that action